





A
MANUAL OF TOXICOLOGY;
IN WHICH THE
SYMPTOMS, TREATMENT, AND TESTS
OF THE VARIOUS
POISONS,
MINERAL, VEGETABLE, AND ANIMAL,
ARE CONCISELY STATED.

TO WHICH ARE ADDED
DIRECTIONS FOR THE RECOVERY
OF PERSONS IN A STATE OF
SUSPENDED ANIMATION.

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“ *De vita hominis nulla cunctatio brevis est.*”

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PREFACE.

THE work of death is so quickly performed by the stronger poisons, in the hands of ignorance, villainy, or suicides ; and the consternation is so great on the part of the bye-standers, and even of medical men themselves, that a plain and concise code of instructions, for the guidance of the practitioner on these emergencies, can hardly be considered a work of supererogation ;—particularly if it be recollected also, that the chances of recovery are always in proportion to the promptitude with which the antidote is administered.—Nor are the cases of suspended animation less urgent in the demand of immediate succour, than those occasioned by poi-

son, and therefore some directions for their treatment are subjoined, with a view of rendering this small publication more generally useful in such distressing emergencies. If it should be the means of saving life, or relieving suffering in a single instance, the author will be amply compensated.

MINERAL POISONS.

ARSENIC.

OXYD, ARSENIOUS ACID, OR WHITE ARSENIC; SULPHURET, OR YELLOW ARSENIC ORPIMENT.

SYMPTOMS.

An austere taste, fetid breath, ptyalism, constriction of the pharynx and œsophagus, hiccup, nausea, and vomiting of brown or bloody matter; anxiety and faintings, heat and violent pain at the pit of the stomach, stools black and offensive, pulse small, frequent, and irregular; palpitations; great thirst and burning heat; breathing difficult; urine scanty, red, and bloody; delirium, convulsions of an epileptic character, and death.

TREATMENT.

Vomiting to be excited or encouraged by large draughts of sugared water, linseed tea, or other emollient fluids. *Lime water*, or chalk and water, may be drank freely if the arsenic has been taken *in solution*. Fat, oil, vinegar, charcoal powder, alkaline sulphurets, and vegetable decoctions, which have been recommended, are not to be relied on. Inflammatory symptoms are to be combated by bleeding from the arm, and by leeches; fomentations, frequent emollient glysters, and other remedies as symptoms may demand. No *specific* antidote yet known.

TESTS.

The ammoniacal sulphate of copper added to solutions of arsenic, produces for the most part a beautiful grass green precipitate, but if dissolved in wine the precipitate would be blackish blue.

Sulphureted hydrogen precipitates arsenic from tea of a beautiful yellow colour, and changes a solution of arsenic in water yellow without a precipitate.

A solution of chromate of potash is a delicate test of arsenic, and may be con-

firmatory of other tests. To exhibit the effect, take five watch glasses; put into one, two or three drops of a watery solution of arsenic; into a second, as much arsenite of potash; into a third, one fourth of a grain of white arsenic; into a fourth, two or three drops of solution of sublimate; into the fifth a few drops of solution of copper. Add to each three or four drops of solution of chromate of potash: in half an hour, a bright, clear, grass-green colour will appear in numbers 1, 2, 3, unchangeable by ammonia; number 4 will instantly exhibit an orange precipitate; number 5 a green, which a drop of ammonia will change to a blue.

From albumen, gelatine, and bile containing arsenic in solution; nitrate of silver produces a white precipitate.

The ammoniaco-nitrate of silver produces a yellow precipitate, soluble in nitric acid and ammonia; but the presence of muriates, or phosphates, or their acids, renders this test fallacious.

Make with the suspected fluid a broad streak on writing paper, then draw a stick of lunar caustic several times over the moistened part, which will become yellow, if Arsenic, or an alkaline phos-

phate be present. If, however, it be arsenic, the streak will be *rough, curdy, and flocculent*, as if done with a crayon ; if a phosphate, *homogeneous, and uniform*. The *phosphoric* yellow, in two minutes, fades into a dull green, becomes darker, and ultimately black ; the *arsenical* yellow remains permanent, or nearly so, for some time, when it becomes brown. To be performed in the shade, and viewed by *reflected*, not *transmitted* light.

The most certain test is the reduction of the metal, by calcining the dried suspected matter in a glass tube, with equal parts of charcoal and potash ; when, if arsenic be present, in very minute quantity, it will be sublimed and adhere to the inside of the tube, in the form of a shining metallic coating, consisting of cubic crystals.

ANTIMONY.

TARTAR EMETIC ; BUTTER OF ANTIMONY ;
VITRIFIED OXYD.

SYMPTOMS.

Similar to those occasioned by acids, with abundant and obstinate vomitings,

copious stools, constriction of the throat, cramps, symptoms of intoxication, and prostration of strength.

TREATMENT.

Vomiting to be *excited* by tickling the throat with a feather or the finger, and by large draughts of mild fluids; or *allayed* by opium according to the previous effect of the poison. The best antidotes are, decoctions of astringent vegetables, such as oak or willow bark, or gall nuts, strong tea, &c., which should be given freely to dilute and decompose the poison.

TESTS.

Tartarised antimony is precipitated from its solution of an orange or deep brownish red colour by sulphureted hydrogen and the hydro-sulphurets; white, by sulphuric acid, alkalies, lime, or barytes water. Alkaline and earthy *neutral* salts do not affect it, but salts with excess of acid do. Infusion of galls occasions a copious whitish yellow precipitate.

The muriate is a dark heavy fluid, to which, if water be added, a white precipitate is formed.

The oxyd is soluble in muriatic acid, forming the muriate.

All the preparations of antimony are readily reduced to the metallic state by calcination with charcoal and potash.

BISMUTH.

NITRATE ; OXYD, OR FACE POWDER.

SYMPTOMS.

Similar to those of other corrosive poisons, with great heat in the chest and very difficult breathing.

TREATMENT.

No specific antidote known. Milk and mild mucilaginous fluids to be drank plentifully to facilitate vomiting and purgatives should be given.

TESTS.

The nitrate boiled with distilled water is decomposed ; part being precipitated as a *sub-nitrate*, and part remaining dissolved, being a *super-nitrate* ; this solution is colourless, reddens litmus paper, and the hydro-sulphurets produce a black

insoluble sulphuret of bismuth. The sub-nitrate is soluble with a little heat in nitric acid, from which the alkalies precipitate the white oxyd, which is easily reduced by calcination. Chromate of potash precipitates it yellow.

COPPER.

SULPHATE, OR BLUE VITRIOL ;
 SUB-ACETATE, OR VERDIGRIS ; FOOD
 COOKED IN FOUL COPPER VESSELS,
 AND PICKLES MADE GREEN
 BY COPPER.

SYMPTOMS. . .

Taste acrid and coppery ; tongue dry and parched ; constriction of the throat and coppery eructations ; severe vomitings, or fruitless efforts to vomit ; dragging at the stomach, dreadful colic, frequent black bloody stools, with tenesmus ; abdomen distended, pulse small, hard, and quick ; syncope, great thirst, and anxiety ; cold sweats, scanty urine, cephalalgia, vertigo, cramps, convulsions, death.

TREATMENT.

Large draughts of milk and water to encourage vomiting. Whites of eggs stirred up with water and taken freely. Inflammatory consequences to be subdued on general principles, and the nervous symptoms by anodynes and antispasmodics. Sugar is *not* a specific antidote, as Orfila at *first* promulgated, but it may be given in coffee with advantage.

TESTS.

The salts of copper are mostly of a bright green or blue colour, and are easily reduced by charcoal at an elevated temperature. The sulphate is partly decomposed by alkalies and alkaline earths. Potash precipitates a *sub-sulphate* of a green colour from it.

If the salts of copper be dissolved in coffee, port wine, or malt liquors, which in part decompose them, they may be detected by adding a spirituous tincture of guaiacum, which will occasion a precipitate varying in shade from a greenish indigo to that of a pale green.

Ammonia added to solution of any cupreous salt, gives a blue or greenish

precipitate, according to the quantity ; but if added in excess, it re-dissolves the precipitate, and forms a deep blue transparent solution.

GOLD.

MURIATE ; FULMINATING GOLD.

SYMPTOMS.

Probably like those of other corrosive poisons, but not known.

TREATMENT.

No specific antidote known, but vomiting should be excited or encouraged by large draughts of warm mucilaginous fluids.

TESTS.

Muriate of gold is decomposed by nitrate of silver. A muriate of silver is precipitated of a reddish brown colour, owing perhaps to some oxyd of gold being carried down with it. Ammonia added to the precipitate dissolves all the muriate of silver, and leaves the oxyd of gold of a beautiful canary yellow colour.

LEAD.

SUPER-ACETATE, SUGAR OF LEAD ;
 RED OXYD, RED LEAD : CARBONATE
 WHITE LEAD ;
 WINES SWEETENED BY LEAD.

SYMPTOMS.

When taken in large quantity, a sugary astringent metallic taste ; constriction of the throat, pain in the region of the stomach, obstinate, painful and often bloody vomitings, hiccup, convulsions, and death.

When taken in small long continued doses, it produces colica pictonum, and paralytic symptoms.

TREATMENT.

The same as that recommended for the salts of barytes.—*Vide Alkaline Earths.*

In addition to which, bleeding must be used if symptoms require it ; Castor oil, either with or without opium to clear the bowels, assisted by frequent emollient glysters. The warm bath should not be omitted.

TESTS.

All the preparations of lead are easily reduced to the metallic state by calcination with charcoal.

The super-acetate dissolved in water is precipitated white by sulphuric acid ; of a canary yellow colour by chromate of potash and chromic acid ; these precipitates being easily reduced by calcination. The alkaline sulphurets precipitate the super-acetate of lead of a blackish colour.

MERCURY.

OXY-MURIATE, SUBLIMATE ;
NITRIC OXYD, RED PRECIPITATE ;
SULPHURET, VERMILION.

SYMPTOMS.

Acrid metallic taste, thirst, fulness, and burning at the throat ; anxiety, tearing pains of the stomach and bowels ; nausea and vomiting of various coloured fluids, sometimes bloody ; diarrhoea and dysuria. Pulse quick, small, and hard ; faintings, great debility, difficult breath-

ing, cramp, cold sweats, insensibility, convulsions, and death.

TREATMENT.

Whites of eggs to be mixed with water, and one to be given every two or three minutes to promote vomiting, and to lessen the virulence of the poison. Milk in large quantities, gum water, or linseed tea, sugar and water, or water itself at about 80. Gluten as it exists in wheat flour, decomposes sublimate, and should be given mixed with water. Inflammatory consequences to be anticipated, and to be subdued by the usual remedies

TESTS.

Mercurial preparations heated to redness in a glass tube with potash, are decomposed, the quick silver being volatilized. The oxy-muriate is precipitated white by ammonia, yellow by potash, and of an orange colour by lime water; by nitrate of tin a copious dark brown precipitate is formed, and by albumen mixed with cold water, a white flocculent one.

The red and nitric oxides may be dis-

solved in muriatic acid, and converted into sublimate.

Vermilion is insoluble in water or muriatic acid ; but is entirely volatilized by heat.

SILVER.

NITRATE, LUNAR CAUSTIC.

SYMPTOMS.

Similar to those occasioned by other corrosive poisons.

TREATMENT.

A table spoonful of common salt to be dissolved in a pint of water, and a wine glass-full to be taken every two minutes, to decompose the poison ; after which mucilaginous drinks may be given, or purgatives may be administered.

TESTS.

Nitrate of silver is precipitated white by muriate of soda, yellow, by phosphate and chromate of soda ; if placed on burning coals it animates them, leav-

ing a coating of silver ; calcined with charcoal, and potash, the silver is reduced to its metallic state.

TIN.

MURIATE ; OXYD, OR PUTTY POWDER.

SYMPTOMS.

Taste austere, metallic, constriction of the throat, vomitings with pain over the whole abdomen ; copious stools, pulse small, hard, and frequent ; convulsive movements of the extremities and face ; sometimes paralysis, and mostly death.

TREATMENT.

Milk to be given ; first in large quantities to distend the stomach and produce vomiting, and afterwards to decompose the remains of the poison.

TESTS.

The muriate precipitates gold from its solution of a purple colour ; it is itself precipitated of a bright yellow colour by strong tea or alcoholic infusion of galls. Albumen and gelatin occasion a copious flocculent precipitate.

The oxide may be volatilized by heat, is soluble in nitric acid, combines with earths by fusion, and with fixed alkalies forms enamel ; it is easily reduced by calcination.

ZINC.

SULPHATE, WHITE VITRIOL ; OXYD.

SYMPTOMS.

An acerb taste, a sensation of choaking, nausea and vomiting, pain in the stomach, frequent stools, difficult breathing, quickened pulse, paleness of face, coldness of the extremities ; but seldom death, owing to the emetic quality of the poison.

TREATMENT.

Vomiting, which is the usual consequence of large doses of sulphate of zinc, to be rendered easy by draughts of warm water, and particular symptoms to be met by appropriate remedies.

TESTS.

The pure sulphate is precipitated white by potash and ammonia ; yel-

lowish white by the alkaline hydro-sulphurets, and of an orange colour by the chromate of lead.

The oxyd is readily reduced by calcination with charcoal and nitre.

ACIDS.

SULPHURIC, OIL OF VITRIOL ; NITRIC,
AQUA FORTIS ; MURIATIC, SPIRIT OF
SALT ; OXALIC, ACID OF SUGAR ;
PHOSPHORIC ; FLUORIC ; TARTARIC ;
PRUSSIC.

GENERAL SYMPTOMS.

Acid burning taste, acute pain in the throat, stomach, and bowels, frequent vomiting of bloody fluid, which effervesces with chalk, or alkaline carbonates, and reddens litmus paper ; hiccup, copious stools, more or less bloody ; tenderness of the abdomen ; difficult breathing, irregular pulse, excessive thirst, drink increasing the pain, and seldom staying down ; frequent, but vain efforts to make water ; cold sweats, altered countenance, convulsions, and death.

Prussic acid is the most violent of poisons, producing almost instant death when applied even in small quantities to the surface of the body.

TREATMENT.

Mix an ounce of *calcined magnesia* with a quart of water, and give a glass-full every two minutes. Soap or chalk and water may be used till magnesia can be procured. Carbonated alkalies are objectionable, on account of the great extrication of gas in the stomach, and the salts formed with them are too irritating for the stomach. Vomiting is to be excited by tickling the throat. Diluents to be taken after the poison is got rid of, and the return to solid food must be very gradual. Inflammatory and other consequences to be treated by the usual remedies.

If the vitriolic acid has been swallowed, water alone should not be given, nor should calcined magnesia with water be given ; but the common carbonate of magnesia may be given freely when mixed with water. There is too much heat generated in the stomach if the above cautions be not attended to.

Chalk and water is preferable to magnesia, if oxalic acid has been taken.

If prussic acid has been taken, emetics are to be given with as little delay as possible, and after their operation oil of turpentine, ammonia, brandy, and other stimulants capable of rousing the system, should be perseveringly employed with warmth, friction, and blisters.

TESTS.

Sulphuric acid is known by its great weight, by evolving heat when mixed with water ; by emitting no fumes. If barytes be added to it a sulphate is formed, which is insoluble in water or nitric acid.

Nitric acid emits orange coloured fumes upon adding copper to it, and is changed blue by it ; if potash be added, a nitrate is formed which deflagrates when thrown on burning coals. It tinges the skin yellow.

Muriatic acid emits pungent fumes ; if nitrate of silver be added to it, a very white precipitate is formed of muriate of silver, soluble in ammonia, but not in nitric acid.

Oxalic acid precipitates lime and all its salts from water, the precipitate

being soluble in nitric, but not in excess of oxalic acid. Exposed to heat it volatilizes, leaving but little residue ; it is decomposed by sulphuric acid becoming brown ; it is dissolved by heat and nitric acid and rendered yellow : muriatic acid dissolves it with heat and decomposes it.

Phosphoric acid precipitates barytes and lime waters, the precipitate being soluble in nitric acid ; it is decomposed by charcoal at a high temperature, evolving carbonic acid, and phosphorus being sublimed.

Fluoric acid exhales white vapours, not unlike those of muriatic acid ; heat is evolved with a hissing noise when water is added to it ; it dissolves glass.

Tartaric acid produces a precipitate from lime water, soluble in an excess of acid, and in nitric also ; with potash it forms a *neutral* and *super-salt* ; it does not precipitate solution of silver, but its salts do.

Prussic acid has a strong odour of bitter almonds, and is contained in that fruit, and in the leaves of the peach and the laurel ; it is soluble in alcohol, but hardly in water, and is precipitated from its solution by nitrate of silver.

ALKALIES.

POTASH ; SODA ; AMMONIA.

SYMPTOMS.

The taste acrid, urinous, and caustic ; great heat in the throat ; nausea, and vomiting of bloody matter, which changes syrup of violets to green, and effervesces with acids if the *carbonated* form of the alkali has been taken ; copious stools, acute pain of the stomach, colic, convulsions, derangement, and death.

TREATMENT.

Vinegar and other vegetable acids to be given largely to neutralize the poison, and the consequent symptoms to be treated on general principles.

TESTS.

Alkalies have many properties in common ; their solutions feel soapy to the touch, change vegetable reds and blues to green ; and yellows to brown ; remain transparent when carbonic acid is added to them, which distinguishes them from solutions of the alkaline earths, barytes, strontian, and lime.

Nitrate of silver is precipitated by them in form of a dark coloured oxyd, soluble in nitric acid.

Potash and soda may be distinguished from each other by evaporating their solutions to dryness ; potash will become moist by absorbing water from the air, while soda will remain dry. Ammonia is known by its pungent smell.

ALKALINE EARTHS.

LIME ; BARYTES ; PURE BARYTES ;
CARBONATE ; MURIATE.

SYMPTOMS.

Violent vomitings, convulsions, palsy, of the limbs, distressing pains in the abdomen, hiccup, alteration of the countenance, and very early death.

TREATMENT.

If lime has been taken, vinegar and other vegetable acids are the best antidotes.

If barytes in any of its forms has been swallowed, a weak solution of Epsom or Glauber's salt should be drank plenti-

fully, to produce vomiting, and at the same time to decompose the poison, which it renders inert by forming an insoluble sulphate. Till the above salts can be had, large draughts of well water alone, or made slightly sour by sulphuric acid, may be drank pretty freely.

TESTS.

Solution of lime changes vegetable blues to green, and is precipitated white by carbonic and oxalic acid, while no change is produced on it by sulphuric acid ; its salts are decomposed by the *fixed* alkalies which precipitate the lime, but not by ammonia.

Pure barytes undergoes changes similar to lime when water is added to it, and acts like it on vegetable colours ; it does not effervesce with acids. Sulphuric acid, and all the sulphates added to a solution of it produce a white precipitate, insoluble in water and nitric acid.

Carbonate of barytes is insoluble in water, but dissolves in nitric or muriatic acid with effervescence.

Muriate of barytes dissolved in water, is not changed by pure ammonia, but its

carbonates, as well as all other alkaline carbonates, throw down a white precipitate, which is carbonate of barytes.

NITRE.

OR SALT PETRE.

SYMPTOMS.

Cardialgia, nausea, painful vomiting, purging, convulsions, syncope, pulse feeble, extremities cold, with tearing pains of the stomach and bowels; difficult respiration, a kind of intoxication, and often death.

TREATMENT.

Similar to that of arsenic, except that lime is not to be used.

TESTS.

If the nitre be thrown on burning coals, it crackles, and gives a beautiful white flame; if powdered, and sulphuric acid be poured upon it, it gives out white vapours; both these circumstances distinguish it from Glauber's salt. It is decomposed at a high temperature, affording oxygen as.

MURIATE OF AMMONIA, OR SAL AMMONIAC.

SYMPTOMS.

Excessive vomitings, with convulsions and general stiffness of the muscles, great pain in the bowels, early alteration of the features and death.

TREATMENT.

Vomiting to be rendered easy by large draughts of warm sugared water, and if not occasioned by the poison, should be excited by the finger. The consequent nervous symptoms to be calmed by anodynes and antispasmodics, and inflammatory ones counteracted by the usual means.

TESTS.

Muriate of ammonia is soon volatilized if placed on hot coals ; if rubbed with quick lime, it gives out the odour of hartshorn. A solution of it in water is precipitated white upon the addition of nitrate of silver.

GLASS, OR ENAMEL.

SYMPTOMS.

If taken in very coarse powder, produces irritation and inflammation of the bowels.

TREATMENT.

Large quantities of crumb of bread should be eaten, to envelope the particles. An emetic of sulphate of zinc should then be given, and vomiting promoted by demulcent drinks.

PHOSPHORUS.

SYMPTOMS.

Occasions symptoms similar to those of concentrated acids.

TREATMENT.

No specific antidote is known, but vomiting should be excited by large draughts of water, and oil or fatty substances should be avoided, as by dissolving the poison they would extend its operation.

TESTS.

If phosphorus, or the rejected contents of the stomach after it has been

taken, be boiled in a retort, having its beak under water, with a solution of caustic potash, phosphorated hydrogen gas is formed, which explodes with a green flame as soon as it reaches the surface of the water.

IODINE.

SYMPTOMS.

The effects of an overdose of Iodine are a strong burning sensation, with constriction in the throat, nausea, and bilious vomiting, heartburn, and slight salivation, pain in the eyeballs, and obscured vision, palpitation, tremor, and occasionally paralysis.

TREATMENT.

Mucilaginous drinks to be taken plentifully, and large emollient glysters to be administered.

TESTS.

Iodine exists in scales of a greyish black colour, and becomes a violet-coloured gas at about 120° : it is sparingly dissolved by water, which tinges raw starch of a purple hue: it stains the skin brown, which soon vanishes: it destroys vegetable colours like dilute chlorine, and has nearly the same odour.

VEGETABLE POISONS.

IRRITATING POISONS.

Aconitum napellus, Monks-hood.

Colchicum autumnale, Meadow Saffron.

Daphne mezereum, Mezereon.

Helleborus fætidus, Bears Foot.

Œnanthe crocata, Hemlock Dropwort.

Phellandrium aquaticum, Water Hemlock

Sedum acre, Wall Pepper, &c. &c.

GENERAL SYMPTOMS.

The general effects of this class of vegetable poisons, are an acrid pungent taste, with more or less of bitterness, excessive heat, great dryness of the mouth and throat, with sense of tightness in it; violent vomitings, and the efforts are continued even after the stomach is emptied; purging, with great pain in the stomach and bowels; pulse strong, frequent, and regular; breathing often quick and difficult; appearance of intoxication; the pupil

of the eye frequently dilated, insensibility resembling death, the pulse becomes slow, and loses its force, and death closes the scene.

If applied externally, they, many of them, produce violent inflammation of the skin, with vesications or eruptions of pustules.

TREATMENT.

If vomiting has been occasioned by the poison, and the efforts are still continued, they may be rendered easier by large draughts of warm water, or thin gruel ; but if symptoms of insensibility have come on without vomiting, it ought to be immediately excited by the sulphate of zinc, or some other active emetic substance, and after its operation a sharp purgative should be given. After as much as possible of the poison is got rid of, a very strong infusion of coffee, or vinegar diluted with water, may be given with advantage. Camphor mixture with æther may be taken frequently, and if insensibility be considerable, warmth, friction, and blisters, may be employed. If inflammation or other dangerous consequences have been in-

duced, they are to be treated upon general principles.

The fruit of the *Fewillea Cordifolia* has been lately recommended as a powerful antidote against vegetable poisons ; it is to be used in as recent a state as possible.—*Vide Annals of Philosophy, for May, 1820.*

REMARKS.

Plants whose flowers have five stamens, one pistil, one petal, and whose fruit is of the berry kind, may at once be pronounced as poisonous.

The umbelliferous plants which grow *in water* are mostly poisonous ; and such as have the corolla purple and yellow, may be suspected of being so.

NARCOTIC POISONS.

Atropa belladonna, Deadly Night Shade.

Conium maculatum, Hemlock.

Digitalis purpurea, Fox Glove.

Hyoscyamus niger, Henbane.

Nicotiana tabacum, Tobacco.

Papaver somniferum, Opium, &c. &c.

Solanum dulcamara, Woody Night Shade.

GENERAL SYMPTOMS.

The narcotic vegetable poisons, if taken into the stomach, or applied to a wound, occasion the following effects : stupor, numbness, heaviness in the head, desire to vomit, slight at first, but afterwards insupportable ; a sort of intoxication, stupid air, pupil of the eye dilated, furious or lively delirium, sometimes pain, convulsions of different parts of the body, or palsy of the limbs. The pulse is variable, but at first generally strong and full ; the breathing is quick, and there is great anxiety and dejection, which if not speedily relieved soon ends in death.

TREATMENT.

The principal object in the treatment of persons under the influence of narcotic poison, is to rouse the sensibility so as to render the stomach alive to the irritation of emetics, and the action of other stimulants. Late experience has proved that this is best effected by repeatedly dashing cold water over the head and neck, whilst the rest of the body is kept dry and warm. Applying the liquor ammoniæ to the nostrils by means of a

feather, introducing a drop or two of hartshorn into each eye, sprinkling the pubes dolichi pruriens, over the neck, breast, and hands; and the application of a mustard plaster over the stomach, have been attended with good effects. The best form of emetic in such cases is said to be the following draught.

℞ Ammon. Subcarb ʒj.
 Pulv. Ipecac. ʒss.
 Tinct. Capsici. ʒij.
 Aq. Menth. Pip. ʒij.

If this should fail, four or five grains of tartar emetic, or from ten to twenty of the sulphate of zinc should be got into the stomach every quarter of an hour, and vomiting assisted by irritating the fauces with the finger. Large and strong glysters of soap dissolved in water, or of salt and gruel, should be speedily administered, to clear the bowels and assist in getting rid of the poison, and active purgatives may be given after the vomiting has ceased. When as much as possible of the poison has been expelled, the patient may drink, alternately, a tea cup full of strong hot infusion of coffee, and vinegar diluted with water. If the drowsiness, which is sometimes extreme, and the insensibility

bordering on apoplexy, be not remedied by these means, blood may be taken from the jugular vein, blisters may be applied to the neck and legs, and the attention roused by every means possible. If the heat declines, warmth and frictions must be perseveringly used. Vegetable acids are on no account to be given *before* the poison is expelled, and it is desirable that but little fluid of any kind should be given.

An elastic gum tube thirty inches long, terminating at one end in a small perforated ivory ball, and having at the other end a pint pewter syringe attached by means of a stop cock, has been effectually used for distending the stomach with warm water, after more than an ounce of laudanum had been taken, when by merely drawing up the piston, the diluted laudanum was easily withdrawn from the stomach, leaving scarcely any unpleasant feeling in the person on whom the experiment was made.

POISONOUS MUSHROOMS.

Agaricus piperatus, Pepper Agaric.

Agaricus necator, Deadly Agaric,

Agaricus chantarellus champignon, &c.

SYMPTOMS.

Nausea, heat, and pain in the stomach and bowels, with vomiting and purging ; thirst, convulsions, faintings ; pulse small and frequent ; delirium, dilated pupil and stupor, cold sweats, and often death.

TREATMENT.

The stomach and bowels to be first cleared by an emetic of tartarized antimony, followed by frequent doses of Glauber's or Epsom salt, and large stimulating clysters. After the poison is evacuated, æther may be administered with small quantities of brandy and water, but if inflammatory symptoms manifest themselves, such stimuli should be omitted, and other appropriate means had recourse to.

REMARKS.

Poisonous mushrooms may be distinguished from the edible ones by their

botanical characters, and by the following criteria. The former grow in wet shady places, have a nauseous odour, are softer, more open and porous ; have a dirty looking surface, sometimes a gaudy colour, or many very distinct hues, particularly if they have been covered with an envelope ; they have soft bulbous stalks, grow rapidly, and corrupt very quickly.

ANIMAL POISONS.

POISONOUS SERPENTS.

Viper ; Black Viper ; Rattlesnake ;
 Gedi Paragoodoo ; Katuka Rekula
 Poda ; Rodroo Pam.

SYMPTOMS.

A sharp pain in the wounded part, which soon extends over the limb or body ; great swelling, at first hard and pale, then reddish, livid, and gangrenous in appearance ; faintings, vomitings, convulsions, and sometimes jaundice ; pulse small, frequent, and irregular, breathing difficult, cold sweats, the sight fails, and the intellectual faculties are deranged. Inflammation and often extensive suppuration and gangrene, followed by death.

TREATMENT.

A moderately tight ligature to be applied above the bites, and the wound left to bleed after being well washed

with warm water; the actual cautery, lunar caustic, or butter of antimony, to be then applied freely to it, and afterwards covered with lint, dipped in equal parts of olive oil and spirits of hartshorn. The ligature to be removed if the inflammation be considerable. Warm diluting drinks, and small doses of ammonia or hartshorn, to cause perspiration; to be well covered in bed, and a little warm wine given occasionally. If gangrene be threatened, wine may be given more freely, and the bark should be had recourse to. Arsenic, the principal ingredient in the Tanjore Pill, has been strongly recommended. Excision is seldom, if ever, necessary for the bite of the viper of this country.

REMARKS.

Poisonous snakes have tubular fangs, but only *one* row of teeth on each side of the upper jaw, while the innocent tribe have *two*. In the former, the scales decrease in size as they approach the head, while the reverse obtains in the latter. The viper of this country, has a dark lozenge-shaped streak running down the back.

POISONOUS FISH.

Clupea Thryssa, Yellow Billed Sprat.
 Cancer Astacus, Sea Lobster.
 —— Ruricolus, Land Crab.
 Murœna Major, Conger Eel.
 Mytilus edulis, Mussel.
 Perca Venenata, Rock Fish, &c.

SYMPTOMS.

In an hour or two, or often in much less time, after eating stale fish, a sense of weight at the stomach comes on with slight vertigo and head-ache, heat about the head and eyes, and considerable thirst; often an eruption of the skin, (utricaria) and in some cases death has happened.

TREATMENT.

An Emetic should be speedily given, or in the absence of it, vomiting may be excited by tickling the throat with the finger, and taking large draughts of warm water. After full vomiting an active purgative should be given to remove any of the noxious matter that may have found its way into the intestines. Vinegar and water may be drank after the above remedies have operated, and

the body may be sponged with the same. Water made very sweet with sugar, to which æther may be added, may be drank freely, as a corrective and a very weak solution of alkali has been recommended to obviate the effects of the poison. If spasms ensue, after evacuations, laudanum in considerable doses is necessary. If inflammation should occur, the usual means of removing it must be employed.

CANTHARIDES.

SPANISH, OR BLISTERING FLY.

SYMPTOMS.

Nauseous odour of the breath, acrid taste, burning heat in the throat, stomach, and belly, frequent vomitings, often bloody, with copious bloody stools; excruciating pain in the stomach; painful and obstinate priapism, with heat in the bladder, and strangury or retention of urine; frightful convulsions, delirium, and death.

TREATMENT

Vomiting to be excited by drinking sugar and water, milk, or linseed tea very freely. Emollient glysters should be administered, and if symptoms of inflammation of the stomach, kidney, or bladder, supervene, they must be subdued by appropriate treatment.

VENOMOUS INSECTS.

Tarantula ; Scorpion ; Hornet ; Wasp ; Bee ; Gnat ; Gad Fly.

SYMPTOMS.

In general the sting of these insects, causes only a slight degree of pain and swelling ; but occasionally the symptoms are more violent, and sickness and fever are produced by the intensity of the pain.

TREATMENT.

Hartshorn and oil may be rubbed on the affected part, and a piece of rag moistened in the same, or in salt and water, may be kept upon it till the pain is removed. A few drops of hartshorn may be given frequently in a little

water, and a glass or two of wine may be taken. The sting may, in general, be removed by making strong pressure over it with the barrel of a small watch key.

SALIVA OF THE RABID DOG.

SYMPTOMS.

At an uncertain interval after the bite, generally, however, between the twentieth day and three or four months, pain or uneasiness occurs in the bitten part, though the wound may have been long healed. Anxiety, uneasiness, languor, spasms, horror, disturbed sleep, difficult respiration succeed, and are soon very much increased ; violent convulsions affect the whole body, hideously distorting the muscles of the face ; the eyes are red and protruded, the tongue swells, and often hangs out, and viscid saliva flows from the mouth ; there is pain in the stomach, with bilious vomitings, a horror of fluids, and impossibility of drinking them. All these symptoms are aggravated till the sufferer is relieved by death

TREATMENT.

Hydrophobia is more easily prevented than cured, indeed it is doubtful if it ever has been cured. Mercury, arsenic, opium, musk, camphor, acids, wine, vegetable and mineral alkali, oil, various herbs, and many other remedies, whose effects are quite opposite, have been employed, but none can be relied on. Large blood-lettings, the warm and cold bath, and almost every other remedial agent have been tried without success.

The bitten part should be completely cut out, even after it has healed, if the symptoms have not yet come on ; the part should then be immersed in warm water, or washed with it as long as it will bleed, and after the most persevering ablution, caustic should be applied to every part of the surface, and then the wound covered with a poultice, and suffered to heal by granulations.

No milder discipline can ensure safety.

ASPHYXIA. OR SUSPENDED ANIMATION.

Suspended animation may be occasioned by various causes—such as drowning, hanging, suffocation, exposure to noxious fumes or exhalations, &c. &c.

TREATMENT OF DROWNED PERSONS.

Remove the body on a plank or hurdle, with the head elevated, to the nearest place of convenience ; or if it be very far to such place, first strip it of the wet clothes, rub it dry, and put on it the spare clothes of bye-standers—this to prevent evaporation, and consequent reduction of its heat. Place it between warm blankets, and keep up the temperature by application of *dry* heat in every possible way. Water extinguishes life as it does fire, by keeping off the air ; therefore, restoring air to the lungs by inflation, is the means most to

be relied upon ; and should be commenced without a moment's delay, and continued perseveringly *during several hours*. This is best accomplished by pressing the tongue downwards and forwards, and passing a small curved tube into the larynx, and attaching a pair of bellows to it ; or, in the absence of them, an assistant must blow into it, to distend the lungs, which may then be emptied by pressure on the chest or belly : these expedients should be done alternately, so as to imitate natural respiration. If oxygen gas could be used instead of common air, it would be much preferable.

Friction with warm flannels to be going on the while, and stimulating vapours may be applied to the nose. Warm glysters, with salt and mustard, or of brandy and water, may be thrown up, and warm spiced wine got into the stomach by means of a flexible catheter and syringe—not to be attempted without such assistance till the patient can swallow. Bleeding is a doubtful remedy, but has been occasionally had recourse to when the countenance was dark, and the limbs warm and flexible.

Tobacco, in any form, is very injurious. Bronchotomy, or laryngotomy, to be had recourse to if other means fail in distending the lungs. Electricity may be used, passing *gentle* shocks through the heart. The body may be insulated, by placing it on a shutter, supported by quart bottles *perfectly dry* on the outside.

If recovery happens, small quantities of light nutritious food may be given, and perspiration kept up by warmth and tepid drinks.

TREATMENT OF PERSONS HANGED.

Remove the ligature as soon as possible, and act as for a drowned person, with the exception of opening the jugular vein, and removing, if possible, six or eight ounces of blood. Death is caused rather by suffocation than by apoplexy, therefore the lungs should be supplied with air without delay.

TREATMENT OF PERSONS SUFFOCATED BY CARBONIC ACID GAS ; HYDROGEN, OR NITROGEN GAS ;—EXHALATIONS FROM DEPOSITORIES OF SOIL, &c.

If the body retains its heat expose it

to the air, and dash cold water over the head, neck, and breast. The lungs should be inflated, the nostrils stimulated, and if the veins of the neck appear full, some blood may be removed from them. If the temperature of the body be below the natural standard, heat must be applied instead of cold. Friction may be useful.

TREATMENT OF STILL-BORN CHILDREN.

The lungs should be perseveringly inflated by means of a quill, or a small female catheter ; the heat kept up by the application of warm flannels, or immersion in warm water. Stimulants may be applied to the nose and pit of the stomach, and friction should be used.

TREATMENT OF PERSONS STRUCK BY LIGHTNING.

Inflate the lungs as early as possible ; apply stimulants, more particularly *gentle* electrical shocks passed through the chest, and along the spine ; keep up the temperature by external heat, and

get warm cordials into the stomach, by means of the flexible tube and syringe.

TREATMENT OF PERSONS WHO HAVE BEEN EXPOSED TO INTENSE COLD.

First use gentle friction with snow or iced water; or, if these are not to be had, the cold bath may be used; and whilst the person remains in it small quantities of hot water must be added at intervals, so as to raise the heat very gradually. The lungs to be inflated. Warm wine, or any other warm fluid to be given very cautiously at first, and solid food to be withheld for some hours after recovery.

TREATMENT OF PERSONS INSENSIBLE FROM EXCESSIVE DRINKING.

A powerful emetic of white vitriol, or tartar emetic, should be got into the stomach as soon as possible, and if the person has lost the power of swallowing, a flexible catheter or tube should be the means of conveying it there. The vomiting should be encouraged as much

as possible with warm water, and large and active clysters of salt and water should be thrown up. The patient should be placed erect, and if the countenance and other appearances are not improved after these means have been used, the jugular vein may be opened, and cold wet cloths applied to the head, particularly if the body is hotter than natural. If the extremities become cold, warmth and friction should be perseveringly used. The flexible tube recommended for narcotic poisons might be used very advantageously in these cases.

FINIS.



